



Coastal Communications



EVALUATION GUIDELINES FOR ECOLOGICAL INDICATORS



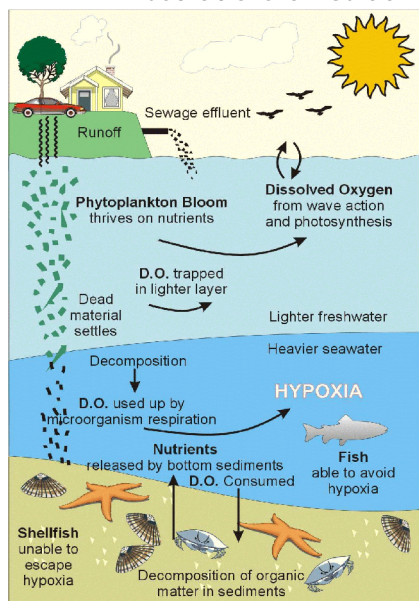
Background

The U.S. EPA's Office of Research and Development (ORD) has developed a technical reference document to assist researchers and environmental managers in the selection and development of ecological indicators for monitoring environmental condition. Entitled *Evaluation Guidelines for Ecological Indicators*, this document is an expansion of previous EMAP efforts to advance the science of environmental monitoring and assessment. By presenting a standardized set of considerations for ecological indicators, the Evaluation Guidelines support research initiatives such as Coastal 2000, which addresses the ecological condition of the nation's estuaries, and Science to Achieve Results (STAR), ORD's competitive grants program. It also provides environmental managers at state and local levels with a useful tool for selecting appropriate indicators to characterize current ecological status and to track or predict significant changes in ecosystems.

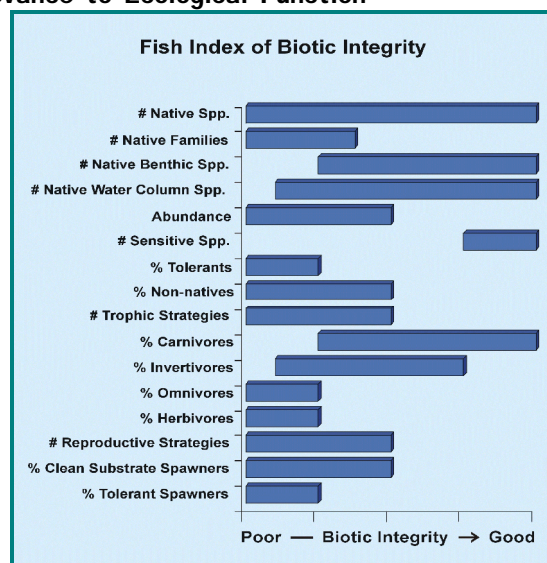
Guidelines

An ecological indicator is defined here as a measure, an index of measures, or a model that characterizes an ecosystem or one of its critical components. The manual's fifteen technical guidelines are organized within four evaluation phases: Conceptual Relevance, Feasibility of Implementation, Response Variability, and Interpretation and Utility. In addition to describing the guidelines, the document illustrates the application of the guidelines to three indicators in various stages of development. The example indicators include a direct chemical measure, dissolved oxygen concentration, as well as two multi-metric biological indices, an index of estuarine benthic condition and an index based on stream fish assemblages.

Illustrations of Guideline 2: Relevance to Ecological Function



Conceptual model of hypoxia development



Range of ecological condition (as expressed by biotic integrity) over which individual metrics comprising the indicator are expected to respond. (Modified from Karr and Angermeier [1986], and Karr [1991]).

Further Information

For further information, please contact Laura Jackson at (919) 541-3088 or jackson.laura@epa.gov. A draft copy of the Evaluation Guidelines is available at the U.S. EPA EMAP web site:

<http://www.epa.gov/emap/html/pubs/resdocs/>.